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ABSTRACT

Path analysis was used to discover predictors of personality, school conduct, and distractibility-hyperactivity problems in this 4-year longitudinal study of 173 rural children. While previous studies had shown that children's behavior disorders are related to sex of child, family disruption, IQ, Bender-Gestalt Test scores, and socioeconomic status, this investigation attempted to assess the extent to which these variables conjointly predict behavior problems over time. At the first-grade level, Slosson IQ, Bender Gestalt Test scores, and occupation of the chief wage earner in the family were established for each child. From second through fourth grades, information on parental marital status was also obtained. In all four grades, teachers rated each child on a 20-item behavior problem checklist. Results indicated that a combination of Slosson IQ, Bender Gestalt Test performance, sex of child, and prior behavior problems was the best predictor of subsequent problems. Personality problems were best predicted by IQ, Bender performance, and prior personality problem scores. In addition to the above variables, sex of child was important in the prediction of conduct and distractibility-hyperactivity problems. Patterns of effects differentiated personality problems from conduct and distractibility-hyperactivity problems, but did not differentiate between conduct and distractibility-hyperactivity problems. This finding indicated that the latter two variables may belong to a more global syndrome of conduct-related disorders. (CB)

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FACE SHEET

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Title: Prediction of Childhood Behavior Problems over a Four-Year Period

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Summary: Path analyses from a four-year longitudinal predictive study of children's behavior problems indicated that a combination of Slosson IQ, Bender Gestalt Test performance, sex of child, and prior behavior problem score was the best predictor of subsequent problems. Personality Problems were best predicted by IQ, Bender performance, and prior Personality Problem scores. In addition to the above variables, sex of child was important in the prediction of Conduct and Distractibility-Hyperactivity Problems. Patterns of effects differentiated Personality from Conduct and Distractibility-Hyperactivity Problems but not Conduct from Distractibility-Hyperactivity Problems.

PS 014517

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Several variables have been shown to be consistently associated with children's behavior problems. Careful reviews by other investigators have confirmed the importance of sex of child (e.g., Graham, 1979; Werry & Quay, 1971) and family disruption (e.g., Emery, 1982). Slide 1 summarizes our review of studies showing an association between IQ and behavior problems. Using Friedman's (1968) magnitude of effect statistic, r_m, this table shows that IQ is consistently related to three major dimensions of behavior problems. Slide 2 summarizes our review of studies showing an association between scores on the Bender-Gestalt Test and children's behavior problems and/or emotional disturbance. Although the range of r_m is quite wide, 23 of 28 (82%) of the r_m's are statistically significant. Thus, Bender scores are also related to emotional disturbance in children. Slide 3 summarizes our review of the studies relating SES to behavior disorders. As this table shows, SES is consistently related to problems of conduct and anxiety-withdrawal, but not to those of hyperactivity. Although numerous studies have demonstrated the relationship of IQ, Bender score, SES, Sex and Marital Disruption to children's behavior disorders, few studies have attempted to assess the extent to which these variables can jointly predict behavior problems over time. The present study was undertaken with this purpose in mind. Additionally, we employed path analysis in an attempt to make causal inferences from these correlational data.

Method

Subjects

Our sample included 84 males and 89 females who were followed annually from first through fourth grades. These were 84% of

all children entering first grade in six rural elementary schools in 1979. The average IQ and Van Dusen-Zill SES for these children were 112.5 (S.D.=14.3) and 36.7 (S.D.=15.1), respectively. The modal parent occupation was coal miner. All children were in 4th grade at the time of this study.

Procedures

In Fall of grade 1, Slosson IQ, Bender-Gestalt Test score, and occupation of the chief wage earner in the family were obtained for each child. From second through fourth grades, we were also provided with parental marital status. In the Fall of first grade and in the Spring of second, third and fourth grades, we collected teacher ratings on a 20 item modified Behavior Problem Checklist which assessed Conduct (8 items), Personality (8 items) and Distractibility-Hyperactivity Problems (4 items).

Statistical Analyses

Full model regression analyses were performed using Conduct, Personality, and Distractibility-Hyperactivity scores at each grade level as dependent variables and Sex, Slosson IQ, BVMGT, SES, Family Disruption and prior Behavior Problem scores as independent variables. Results of the analyses were subjected to path analysis in order to appraise possible causal relationships between predictor variables and specific behavior disorders.

Results

Results of regression analyses indicated that IQ, BVMGT and prior Personality Problem scores were the strongest predictors of later Personality Problems. These effects can be seen most clearly in the path diagram on slide 4, which exhibits only those effects necessary for an adequate reconstruction of the original correlation matrix. Slosson IQ contributed significantly to Personality Problems in both first and fourth grades. BVMGT performance, on the other hand, tended to have greater impact on Personality Problems at later grade levels. Sex of child, SES and Family Disruption had no significant direct effects on Personality Problems at any grade levels, suggesting that previously found relationships between these variables were due either to spurious factors or to their correlations with other causal factors. The latter alternative seems most plausible since only 25% of the total variance in childhood Personality Problems was accounted for by variables included in the present study. The finding that prior problem history had the greatest effect on later Personality Problems indicates that these problems are fairly stable over time.

The path diagram illustrating proposed causal effects of precursor variables on childhood Conduct Problems is shown on slide 5. Sex of child contributed significantly to the development of Conduct Disorders at all four grade levels with many more boys than girls developing Conduct Problems in each grade. BVMGT performance had a marginal effect on first grade problems which did not become significant until fourth grade. Slosson IQ was only predictive of Conduct Problems very early in grade school. SES and Family Disruption did not significantly predict Conduct Problems at any grade levels, suggesting that any effect these

variables may have on Conduct Problems is indirect at best. A prior history of problems was again the strongest single predictor of later problems, suggesting that Conduct Problems are also quite stable over time. Multiple R's obtained for first through fourth grade Conduct Problems were all significant, with the largest accounting for 61% of the total variance.

Slide 6 shows the path diagram relating precursor variables and childhood Distractibility-Hyperactivity Problems. The amount of variance in Distractibility-Hyperactivity Problems accounted for by the combination of effects from these variables ranged from 19 to 58% over the four years. As with Conduct Problems, sex of child and prior problem histories were found to be the greatest and most consistent predictors of subsequent problems. BVMGT performance had significant influence on first grade problems and again on problems in third and fourth grades. Slosson IQ contributed significantly to Distractibility-Hyperactivity Problems only in first grade, again suggesting that low IQ is especially valuable in the prediction of early grade school problems. Finally, Family Disruption and SES had significant effects on second and third grade Distractibility-Hyperactivity Problems, respectively. The latter two effects had no discernable patterns or trends associated with them.

Discussion

Comparing the path diagrams for each of the three behavior problems, it was found that a model consisting of sex of child, BVMGT performance, Slosson IQ and prior problem history was the best predictor of subsequent behavior problems. Furthermore, it was found that different variables predicted Personality Problems

than Conduct or Distractibility-Hyperactivity Problems. For example, sex of child had significant effects at each grade level for Conduct and Distractibility-Hyperactivity Problems, but no direct effects on Personality Problems; Slosson IQ had large proposed causal influences on Personality Problems in both early and later grade levels but only at early grades for Conduct and Distractibility-Hyperactivity Problems; BVMGT performance had both initial and later effects on Conduct and Distractibility-Hyperactivity Problems but only later effects on Personality Problems. Such findings confirm the independence of these dimensions. Precursor variables, on the other hand, did not differentially predict Conduct and Distractibility-Hyperactivity Problems, suggesting the similarity of these dimensions. Effects of sex of child, Slosson IQ, BVMGT performance and Family Disruption were similar for both problems, with the magnitudes of the effects being only slightly greater for Distractibility-Hyperactivity Problems than Conduct Problems. A small but significant effect for SES on third grade Distractibility-Hyperactivity Problems was the only factor which appeared to differentiate the two problems. The present results, taken together with other reports of similarities in symptoms, prognosis, and treatment, indicate that Conduct and Distractibility-Hyperactivity Problems may not be separate syndromes. Rather, they appear to belong to a larger and more global syndrome of conduct-related disorders.

Table 1: Summary of Studies with Representative Samples Relating IQ to Children's Behavior Disorders

Dimension	# of Studies	Range of r_m	Median r_m	% Significant r_m
Conduct Disorder	9	.17 to .67	.23	89%
Anxiety-Withdrawal	7	.07 to .80	.36	86%
Hyperactivity	4	.09 to .53	.42	75%

Slide 1

Table 2: Summary of Studies Relating Bender-Gestalt Scores to Indices of Behavior Disorder and Emotional Disturbance

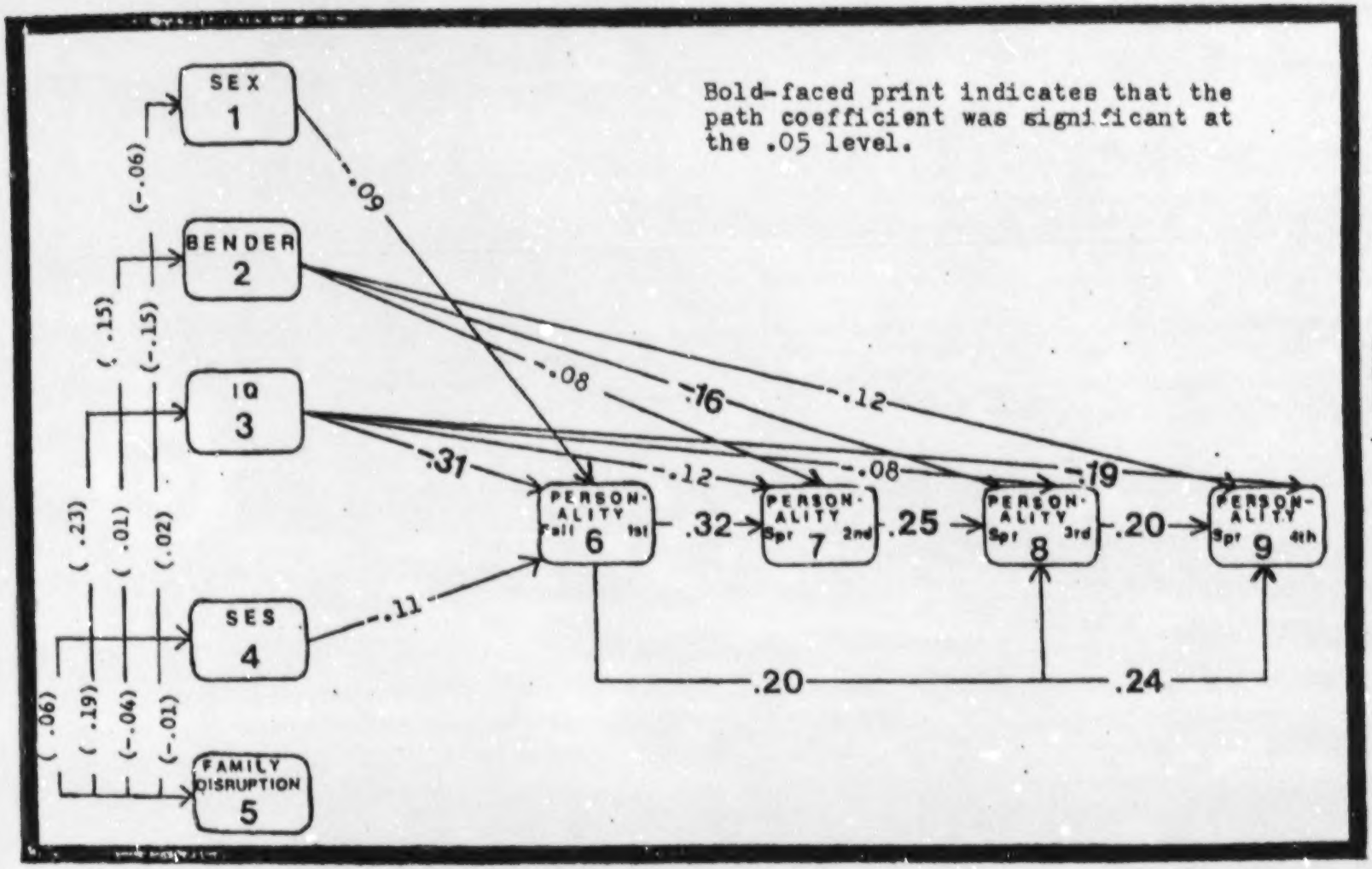
Dimension	# of Studies	Range of r_m	Median r_m	% Significant r_m
Global Ratings of Behavior Disorder and Emotional Disturbance	28	.00 to .73	.38	82%

Slide 2

Table 3: Summary of Studies with Representative Samples Relating SES to Children's Behavior Disorders

Dimension	# of Studies	Range of r_m	Median r_m	% Significant r_m
Conduct Disorder	12	.06 to .43	.20	75%
Anxiety-Withdrawal	9	.13 to .58	.23	89%
Hyperactivity	6	.06 to .30	.12	17%

Slide 3



Slide 4

Figure 1: Path Diagram Illustrating the Direct Causal Effects of Precursor Variables on the Development of Personality Problems after Non-meaningful Paths had been Deleted--Trimmed Model

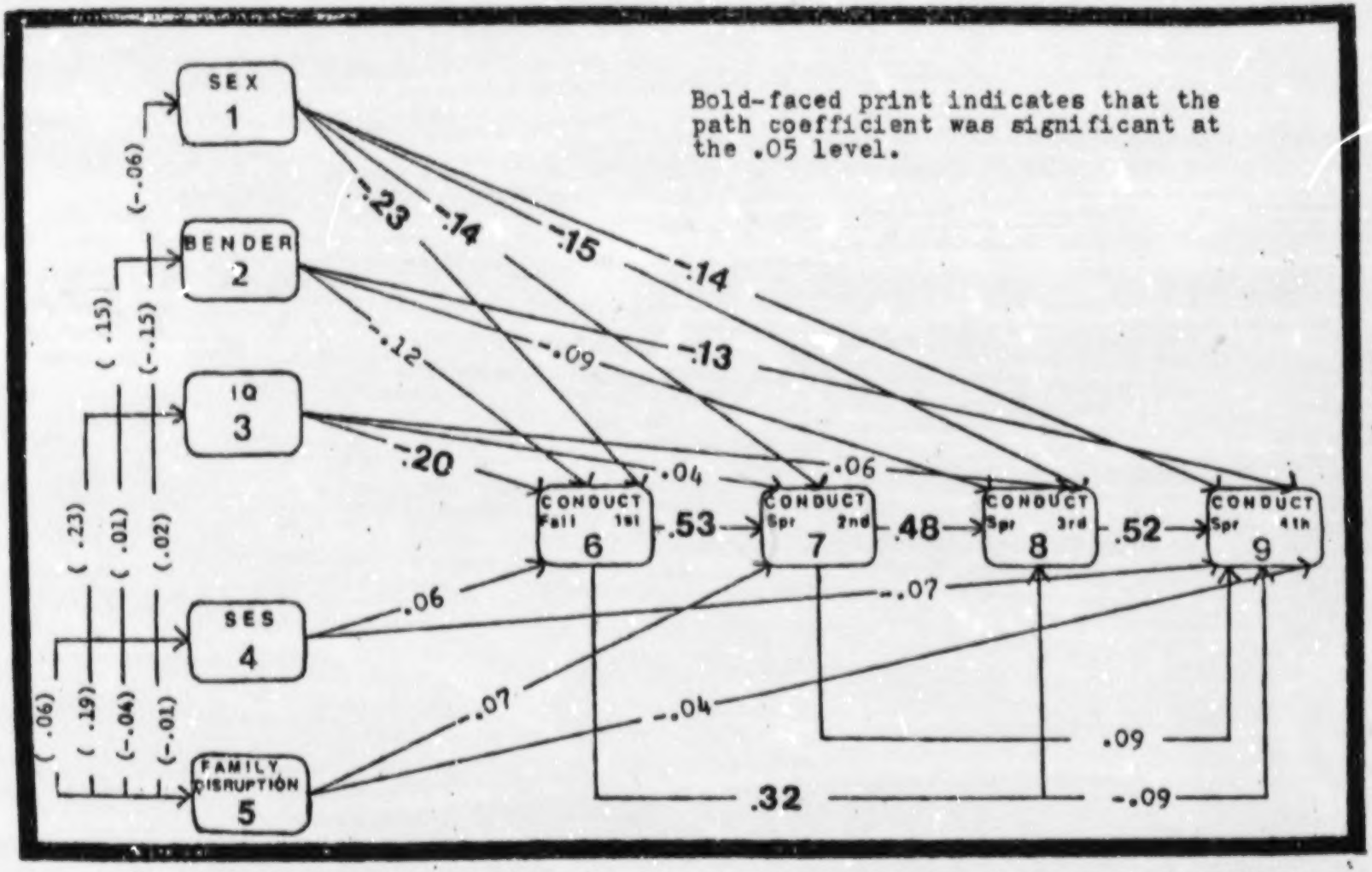


Figure 2: Path Diagram Illustrating the Direct Causal Effects of Precursor Variables on the Development of Conduct Problems after Non-meaningful Paths had been Deleted--Trimmed Model

Slide 5

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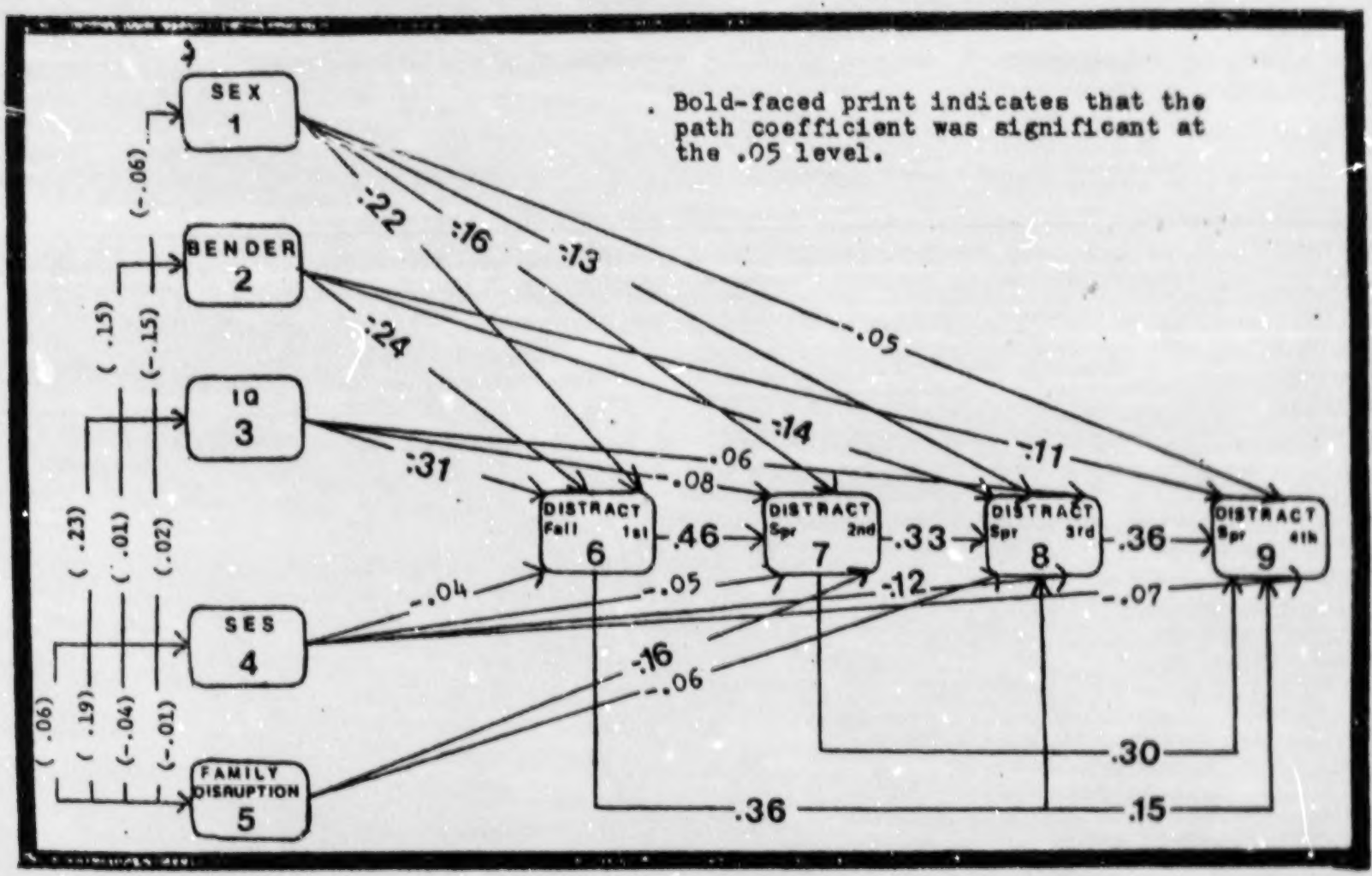

Slide 6

Figure 3: Path Diagram Illustrating the Direct Causal Effects of Precursor Variables on the Development of Hyper./Distract. Problems after Non-meaningful Paths had been Deleted--Trimmed Model

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